

Translation of selected passages from JP-A-003123/1997

Page 1, Abstract:

【Abstract】

【Object】 To provide a novel water-absorbent polymer which can efficiently display water absorbency of the water-absorbent polymer even in its high concentration.

【Constitution】 A water-absorbent polymer, being characterized by displaying a delayed bindability on an occasion of contacting a water-containing liquid.

Page 2, column 1, lines 1 to 26 (Claims):

【Claims】

【Claim 1】 A water-absorbent polymer, being characterized by displaying a delayed bindability on an occasion of contacting a water-containing liquid.

【Claim 2】 A water-absorbent structure, comprising a supporting structure containing a water-absorbent polymer being characterized by displaying a delayed bindability on an occasion of contacting a water-containing liquid.

【Claim 3】 A water-absorbent polymer, wherein, when a steel ball of 15/32 inches in diameter is allowed to freely fall from a height of 20 cm onto a swollen hydrogel obtained by allowing the water-absorbent polymer to absorb 25 g of physiological saline per g of the water-absorbent polymer, the steel ball is not prevented from entering the swollen hydrogel until at least 5 minutes have passed since the water absorption has started, with the water-absorbent polymer being characterized by displaying a liquid permeability of not more than 200 seconds under load and a diffusing absorption capacity of not less than 25 g/g.

【Claim 4】 A process for producing a water-absorbent polymer, being characterized by comprising the step of treating 100 parts by weight of an acid-group-containing crosslinked water-absorbent polymer with 0.1 to 10 parts by weight of a polyamine

compound, wherein the acid-group-containing crosslinked water-absorbent polymer displays a diffusing absorption capacity of at least 25 g/g for physiological saline under a load of 20 g/cm², and wherein the polyamine compound has an average molecular weight of not less than 5,000.

【Claim 5】 A process according to claim 4, wherein the polyamine compound further contains an acid compound.

【Claim 6】 A process according to claim 5, wherein the amount of the acid compound is not smaller than 50 mol % of the total of the amino groups of the polyamine compound.

【Claim 7】 A process according to claim 6, wherein the acid compound displays an acid dissociation constant (pKa, 25 °C) of less than about 4 in its aqueous solution.

Page 10, column 17, line 32 to column 18, line 24 (Examples 1 to 6):

【0055】 (Example 1) An amount of 6.5 parts of 43 % aqueous solution of polyethylenimine (average molecular weight = 70,000) hydrochloride (100 mol %-neutralized product) was added to 100 parts of the crosslinked water-absorbent polymer (1), as obtained in Referential Example 1, to mix them together, and then the resultant mixture was left alone at room temperature for 30 minutes. The resultant hardened product was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (1) according to the present invention.

【0056】 (Example 2) An amount of 5.5 parts of 43 % aqueous solution of polyethylenimine (average molecular weight = 70,000) hydrochloride (70 mol %-neutralized product) was added to 100 parts of the crosslinked water-absorbent polymer (2), as obtained in Referential Example 2, to mix them together, and then the resultant mixture was retained in a hot-air dryer of the temperature of 90 °C for 20 minutes. Then, the mixture was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (2) according to the present

invention.

【0057】 (Example 3) An amount of 6.4 parts of 42.6 % aqueous solution of polyethylenimine (average molecular weight = 70,000) hydrochloride (95 mol %-neutralized product; as prepared by adding 112 parts of 36 % hydrochloric acid into 100 parts of 50 % aqueous polyethylenimine solution) was added to 100 parts of the crosslinked water-absorbent polymer (3), as obtained in Referential Example 3, to mix them together, and then the resultant mixture was retained in a hot-air dryer of the temperature of 90 °C for 20 minutes. Then, the mixture was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (3) according to the present invention.

【0058】 (Example 4) An amount of 7.2 parts of 36.4 % aqueous solution of polyethylenimine (average molecular weight = 70,000) phosphate (as prepared by adding 141 parts of 26.8 % aqueous phosphoric acid solution into 100 parts of 50 % aqueous polyethylenimine solution) was added to 100 parts of the crosslinked water-absorbent polymer (1), as obtained in Referential Example 1, to mix them together, and then the resultant mixture was retained in a hot-air dryer of the temperature of 70 °C for 20 minutes. The resultant hardened product was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (4) according to the present invention.

【0059】 (Example 5) An amount of 5 parts of 30 % aqueous solution of polyethylenimine (average molecular weight = 70,000) was added to 100 parts of the crosslinked water-absorbent polymer (2), as obtained in Referential Example 2, to mix them together, and then the resultant mixture was retained in a hot-air dryer of the temperature of 90 °C for 20 minutes. Then, the mixture was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (5) according to the present invention.

【0060】 (Example 6) An amount of 6.4 parts of 47.3 % aqueous solution of

polyethylenimine (average molecular weight = 70,000) lactate (as prepared by adding 227 parts of 46.1 % aqueous lactic acid solution into 100 parts of 50 % aqueous polyethylenimine solution) was added to 100 parts of the crosslinked water-absorbent polymer (3), as obtained in Referential Example 3, to mix them together, and then the resultant mixture was retained in a hot-air dryer of the temperature of 90 °C for 20 minutes. Then, the mixture was passed through a metal gauze of the mesh opening size of 840 µm, thus obtaining a water-absorbent polymer (6) according to the present invention.

Page 11, column 20, lines 10 to 15 (Example 4):

【0064】 (Example 4) The water-absorbent polymers (1) to (6) according to the present invention and the comparative water-absorbent polymers (1) to (3) were measured by, as to the water-absorbent polymers, the diffusing absorption capacity, the steel-ball-falling test, the liquid permeation rate under load, and the adhesion to the steel sheet, and further by the diffusing absorption capacity of the water-absorbent structures and the ratio of falling-off of the water-absorbent polymers from the water-absorbent structures. The results are shown in Table 1.

Page 11, column 20, lines 16 to 17 and upper portions (relevant to Examples 1 to 6) of

Table 1:

【0065】

【Table 1】

	Diffusing absorption capacity (g/g)	Ball-falling test				Adhesion to steel sheet	Liquid permeability under load (seconds)	Evaluation of water-absorbent structure	
		3 minutes later	5 minutes later	10 minutes later	15 minutes later			Ratio of falling off (%)	Diffusing absorption capacity (g/g)
Water-absorbent polymer (1) according to present invention	31.0	×	×	○	○	None	20	1	22.7
Water-absorbent polymer (2) according to present invention	29.5	×	×	○	○	None	18	1	21.4
water-a Water-absorbent polymer (3) according to present invention	33.0	×	×	○	○	None	19	1	23.8
Water-absorbent polymer (4) according to present invention	29.7	×	×	○	○	None	20	1	21.5
Water-absorbent polymer (5) according to present invention	38.2	△	○	○	○	Seen	20	1	20.6
Water-absorbent polymer (6) according to present invention	32.1	×	×	○	○	None	21	1	23.2